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the petioles of *Onoclea Struthiopteris*, which the usual micro-chemical tests proved to be oxalate of lime.

Professor Bessey explained a convenient form of herbarium doors.

J. C. Arthur exhibited specimens of barley, the so-called *Hordeum trifurcatum*, in which the awn of the flowering glume is jointed and bears more or less perfect flowers.

Dr. Walker of New Orleans spoke of the dwarfing of corn grown in a flower pot in his window. Others mentioned similar phenomena.

Mr. Arthur called attention to the erroneous use of the word fungoid by nearly all English speaking botanists. It is properly applied to growths whose origin is not known or which bear some resemblance to a fungus. It can not, however, be properly applied to a fungus or its product. The word almost always intended is either the noun *fungus* or the adjective *fungous*. As a spheroid can not be a sphere, so a fungoid growth can not be a fungus or a fungous growth.

Entertainment of the Botanists at Ann Arbor.

Whatever good feeling and sociability may exist, it can not be disputed that the enjoyment and satisfaction to be derived from large conventions, in which the majority are strangers to each other, are greatly enhanced by social gatherings arranged to bring those of like tastes together. It is on this account that the receptions, excursions, etc., for the Botanical Club may be considered of not much less importance than the other features of the meetings, especially in view of the fact that through contact and personal acquaintance the general elevation of the standard of botanical thought among the members is largely affected.

The only gathering at Ann Arbor specially for the botanists was the excursion by carriage to tamarack swamp. The success of this delightful and thoroughly profitable trip was due to the efforts of Professor Spalding, to whom the club is under many obligations.

As it approached 3 o'clock, Monday afternoon, there was a noticeable exodus from the biological and other sections of the association, and the members of the club and some of their friends were soon seated in the various vehicles waiting outside ready for the start. The excursion was restricted to members of the club, and to such others as provided their own convey-

ances, or for which there was room after the club was seated; yet with these restrictions nearly one hundred participated.

The way lay along a straight, quite level, but pleasant road, for two miles and a half, when the whole company left the vehicles and stepped at once into as fine collecting grounds as the general botanist often sees. We passed first through a thick growth of deciduous trees, then in among the tamaracks. The soil was peaty and damp and the vegetation rank. Nearly all sorts of plants were represented; there were some with showy flowers and more yet of the weedy kinds with inconspicuous flowers that botanists usually prize; ferns, mosses and liverworts made luxuriant growth; the parasitic and microscopic fungi were fairly abundant; the parasitic fungus on scale insects attracted much attention; several interesting species of myxomycetes were found; the pileated fungi, such as toadstools, etc., were specially profuse and of lovely colors and shapes; aerial algæ were taken from the bark of trees, and diatoms and desmids could undoubtedly have been found in the running and standing water had anyone looked for them. In short, there was something to interest the specialist of almost any group of plants, as well as the general botanist. After returning to the carriages another halt was called a half mile beyond and an exploration of a less inviting spot was made, yielding *Coptis*, *Circæa alpina*, *Drosera*, *Bartonia*, and many parasitic fungi. The party then started on the return by another road, and reached the city in time for tea, having been gone about three hours and half, and traveled seven miles.

This excursion was in every way thoroughly enjoyable and profitable, and one of the most interesting botanical features of the meeting.

The arrangements for registration of the members of the Botanical Club were generously taken in charge by the local committee of the association. They provided the necessary registry blanks, silk badges and attendants. Although greatly indebted for the good intentions of the committee, yet it is to be deplored that the execution was so imperfect that only thirty-seven out of the eighty-five who registered fully complied with the requirements. This was because the blanks and badges were not on hand promptly at the beginning of the meeting. Only half enough blanks were furnished, and the attendants did not give close enough oversight to the registering.

The local committee also promised, as was fully announced, that the botanists would be given an opportunity for collecting on the long excursion of Saturday, whether it went to the Saginaw valley or the Detroit river. When it was learned that no

such arrangements had been made, several botanists gave up the trip entirely and collected in the vicinity of Ann Arbor, while those who did go would gladly have left the boat at any one of several points, had it been possible, and been picked up on the return.

We can only assume that this apparent slight of the botanists was due to a supposition on the part of the local committee that the botanists were an insignificant part of the Association, not meriting much trouble or attention. If this is the proper explanation, the registration of over a fifth of the total attendance as members of the Botanical Club must have brought about a change of opinion before the meeting was over.

Proof that Bacteria are the Direct Cause of the Disease in Trees Known as Pear Blight.¹

BY J. C. ARTHUR.

It has now been five years since Professor Burrill brought the subject of pear blight before this Association and announced that it was due to bacteria. Previous to that time no instance of bacteria acting the rôle of vegetable parasites had been known, and the discovery was therefore a very important one, opening the way to a new and promising field of research.

The experiments of Professor Burrill showed that the disease alluded to was invariably accompanied by a specific form of bacteria (since named *Micrococcus amylovorus* Burrill), and that as the disease progressed a colorless or yellowish viscid substance was formed, apparently by the action of the bacteria upon the starch and other substances of the plant. The disease results in the complete death of all those parts of the tree that are attacked.

Although from these and subsequent investigations the theory has been quite generally accepted that the bacteria are the cause of the disease, no rigid proof of it has yet been brought forward. It was with a view to either absolutely prove or disprove the theory that a course of experiments was begun last March, and continued to the present time.

It has been incontestibly shown that the disease may be readily transmitted to healthy tissues by introducing a drop of an infusion made by putting some thin slices of the diseased tissues

¹ Read before the American Association for the Advancement of Science, August, 1885.